

ABSTRACT

An STOL aircraft structure has a variable-attitude, variable-area wing in addition to a traditional airfoil. The variable wing has an angle of attack that varies from 0° to a predetermined angle far in excess of the stall angle. The variable wing area can be adjusted from 0% to 100% by a roller furling arrangement. The aircraft structure operates during takeoff by deploying the variable wing with an attitude exceeding the stall angle, applying thrust to the aircraft so that the variable wing generates reaction lift and the aircraft attains a predetermined altitude, and stowing the variable wing so that the traditional airfoil is the primary lifting surface. Those steps are reversed for landing.